293. VEHICLE FENDERS.

7

ENGLISH 3,394 of 1876

Trouchon

7

8/1876

Fig. 1.

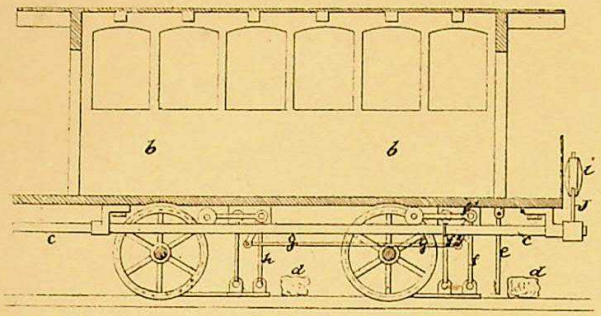


Fig. 2

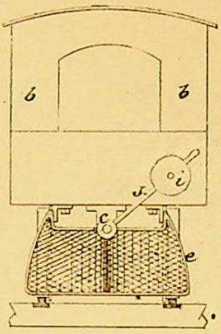


Fig. 3.

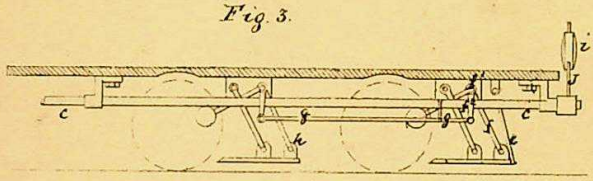


Fig. 4

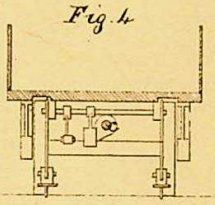


Fig 5

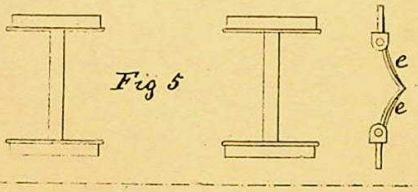


Fig. 7

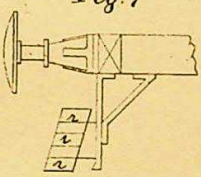


Fig 16.

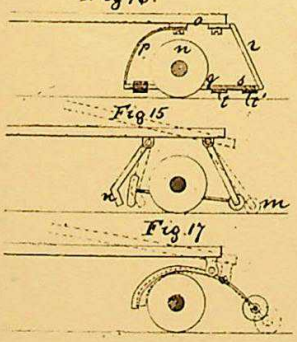
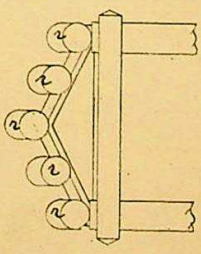


Fig. 8.



The filed drawing is not colored.

293. VEHICLE FENDERS.

ENGLISH 3394 of 1870

Fig. 9.

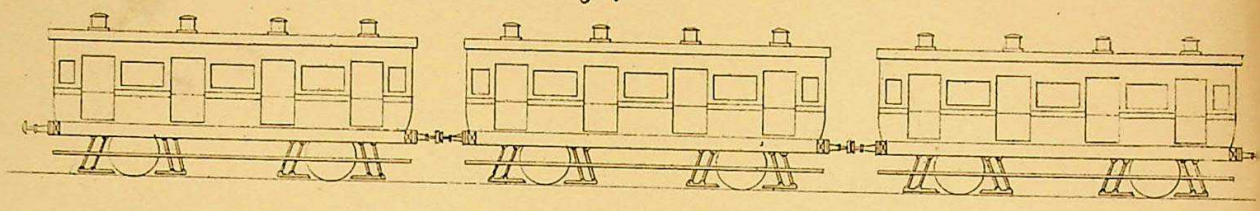


Fig. 10.

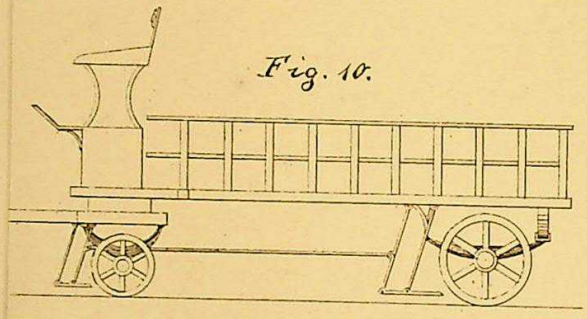


Fig 11.

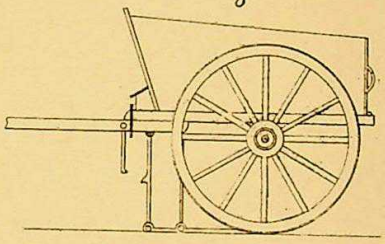


Fig. 6.

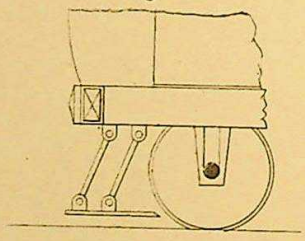


Fig. 20

Fig. 21.

Fig. 22

Fig. 24.

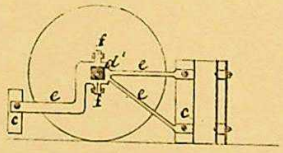


Fig. 25

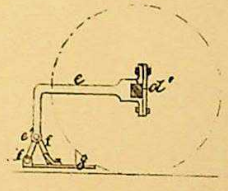


Fig. 12.

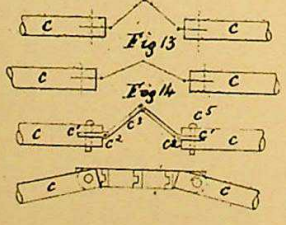
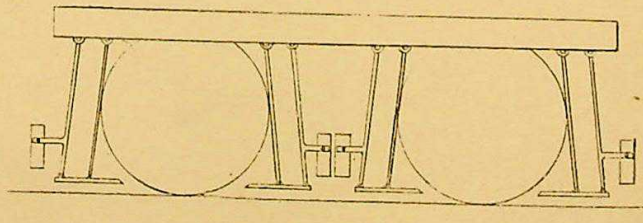


Fig. 23.



Malby & Sons, Photo-L

A.D. 1876, 28*th* AUGUST. N° 3394.

Brakes.

LETTERS PATENT to Pierre Alfred Tronchon, of 2, Rue Ste. Appoline, Paris, France, Mechanic, for the Invention of "IMPROVEMENTS IN THE CONSTRUCTION OF SELF-ACTING BRAKES FOR LOCOMOTIVE AND OTHER CARRIAGES."

Sealed the 27th February 1877, and dated the 28th August 1876.

PROVISIONAL SPECIFICATION left by the said Pierre Alfred Trunchon at the Office of the Commissioners of Patents on the 28th August 1876.

PIERRE ALFRED TRONCHON, of 2, Rue Ste. Appoline, Paris, France, Mechanic. "IMPROVEMENTS IN THE CONSTRUCTION OF SELF-ACTING BRAKES FOR LOCOMOTIVE AND OTHER CARRIAGES."

Brakes constructed according to this Invention are applicable to locomotives, railway carriages, tram cars, and all other vehicles, also, for instance, to the carriages of roller skates. The braking appliance proper consists of a parallelogram, one member of which is a shoe taking its pressure and bearing vertically against the rail or road and against the lower part of the carriage wheel, and this shoe is suspended from some part of the carriage frame by means of a jointed double rod.

The brake may be actuated through lever or other well-known mechanical appliance, either by the conductor or other attendant, or from some motive power, such as steam, compressed air, or electricity. Or it may also be put into gear automatically in the moment that it meets an obstruction on the rail or road, the obstruction pressing against a hinged suspended wedge-shaped apron or flap, which is made to put the shoe into braking action.

As applied to a tramway car the shoes are preferably actuated by a counter-weighted lever within the reach of the conductor, and fixed to a shaft running lengthways under the carriage. As applied to railway carriages I prefer to connect them between each two carriages by means of jointed rods or bars, which form an angle against each other, and thus accommodate themselves to the varying heights of the carriages and their distances apart. The brakes in each carriage are connected by weigh shafts, levers, and rods, or other well-known mechanical connecting appliances.

As applied to roller skate carriages one member or link may be fitted with a roller or shoe, which can take its bearing against the ground, the other member

being also jointed to the foot plate or other convenient part, and connected to the first-named member. It is formed with a shoe which can be made to bear against the ground and against the opposite side of the roller or wheel, or this member may be a spring. The brake is put into action when pressure is brought strongly against the back of the skate. The rubbing parts may be fitted with leather or similar material. The aforesaid members of the brake need not be parallel.

SPECIFICATION in pursuance of the conditions of the Letters Patent filed by the said Pierre Alfred Tronchon in the Great Seal Patent Office on the 28th February 1877.

PIERRE ALFRED TRONCHON, of 2, Rue Ste. Appoline, Paris, France, Mechanic. "IMPROVEMENTS IN THE CONSTRUCTION OF SELF-ACTING BRAKES FOR LOCOMOTIVE AND OTHER CARRIAGES."

Owing to the numerous railway accidents which daily occur the necessity of having powerful brake power has for some time been acknowledged. There are various conditions to be fulfilled to obtain the object of my Invention.

First. That it should be self-acting, and that promptly and efficiently in case of accident.

Second. That it may be under the control of the guard and driver.

Third. That it should act automatically when only operated by the obstacle itself.

Brakes constructed according to this Invention are applied to locomotives, railway carriages, tram cars, and all other vehicles, also, for instance, to the carriages of roller skates. The braking appliance proper consists of a parallelogram, one member of which is a shoe taking its pressure and bearing vertically against the rail or road, and against the lower part of the carriage wheel, and this shoe is suspended from some part of the carriage frame by means of jointed double rods.

The brake may be actuated through lever or other well-known mechanical appliance, either by the conductor or other attendant, or from some motive power, such as steam, compressed air, or electricity; or it may also be put into gear automatically in the moment that it meets an obstruction on the rail or road, the obstruction pressing against a hinged suspended wedge-shaped apron or flap, which is made to put the shoe into braking action.

As applied to a tramway car the shoes are preferably actuated by a counter-weighted lever within the reach of the conductor, and fixed to a shaft running lengthways under the carriage. As applied to railway carriages I prefer to connect them between each two carriages by means of jointed rods or bars, which form an angle against each other, and thus accommodate themselves to the varying heights of the carriages and their distances apart. The brakes in each carriage are connected by weigh shafts, levers, and rods, or other well-known mechanical connecting appliances.

As applied to roller skate carriages one member or link may be fitted with a roller or shoe, which can take its bearing against the ground, the other member being also jointed to the foot plate or other convenient part, and connected to the first-named member. It is formed with a shoe, which can be made to bear against the ground and against the opposite side of the roller or wheel, or this member may be a spring. The brake is put into action when pressure is brought strongly against the back of the skate. The rubbing parts may be fitted with leather or similar material. The aforesaid members of the brake need not be parallel.

As it is my intention to apply this system to all kinds of vehicles I give in the accompanying Drawings detailed examples of the application of the principle, and different general applications for several kinds of vehicles.

At Figures 1, 2, 3, and 4 my Invention is shown as applied to a tramway carriage illustrating how the principle is applied, and the method of action in such manner that the mechanical operation being well understood the different examples hereafter given will be to show that the same principle can be applied to all kinds of vehicles.

b is a carriage or tramway car; *c*, a longitudinal shaft operated by a lever *j*, which may be operated by the foot or hand through suitable mechanism placed at the disposal of the conductor for communicating the motion to the whole brake system, but this is only the case where the stoppage of the carriage is to be under the control of the conductor. If, for the sake of example, however, there is an obstacle *d* placed on the road it will act on the protecting plate *e*, motion will be transmitted to the first brake *f*, which will operate the axis f^1, and by means of the crank f^2 and connecting rod *g*, the movement will be transmitted to the second shoe *h*. If the brake is applied to a vehicle with four wheels or with a connecting rod on a vehicle of six wheels, it should be understood that a single brake is sufficient for a vehicle with two wheels, the counterweights *i* continually tend to bring the shoes *f* and *h* away from the rail when there is no obstacle or when the conductor does not operate upon the lever *j*.

The automatic movement is such that if there is an obstacle on the road, not only is it thrown on one side, but still while it remains it acts on the brakes *f* and *h*, and the greater the pressure so is the action greater. When the cause is removed the brakes are disengaged by the counterweights *i* or by other equivalent means.

The movements of the front and back wheels being in unison an obstacle placed in front of one of these wheels will transmit its action to corresponding wheels independently of the will of the conductor, I thus obtain a brake motion which is either automatic in its action or at the will of the conductor by means of the lever *j*.

As before stated this example is supposed to be applied to a tramway carriage, and at Figures 6, 7, 8, 9, 10, and 11, I further illustrate my Invention as applied to other class of vehicles.

Figure 9 illustrates the Invention as applied to railway carriages; here several carriages are shown coupled together, and for the curves there is provided sufficient play, which should be increased as the curves have a less radius; it is however necessary that the driving shafts of the different carriages correspond in order that the obstacle or stoppage of one carriage may be transmitted to the following carriage; for this purpose the arrangements shown at Figures 12, 13, and 14, are applicable where I suppose the two driving shafts, *c*, as belonging to two different carriages; at the ends of these shafts I form slots c^1, in which a piece c^2 is inserted, connected to a double hinge c^3, it will be understood that during the rotation the shaft *c* will draw the hinges c^3, and transmit this motion to the corresponding shaft on the next carriage; there is no loss of time in the rotation, and moreover great latitude may be allowed between two coupled carriages whereby great advantage is obtained, particularly for sharp curves. To facilitate coupling the same may be effected by a pin or bolt; at c^5, on locomotives, the rail clearer is brutal if it comes against any obstacle having life; it tears and mangles it. According to my Invention I break this shock (which is often a killing shock) by the application of india-rubber, combined with metal, an example of which is given by the Drawing at Figures 7 and 8. This application consists of one or several tubes, discs, or cylinders, of caoutchouc *r*, combined or not with spring tubes made of metal, which are placed either directly on the guard or spread over the whole width of the vehicle; these cylinders or caoutchouc arrangements or appliances are carried down to the level of the rail, and follow the rising or falling motions of the carriage; however, it may be loaded in such manner that an obstacle, however light it may be, cannot become engaged or entangled under the guard, whether it is in a body, leg, arm, or even a hand, the shock is completely prevented; owing to the nature of the material employed the trembling motions are arrested and almost annulled, and the cylinders are always maintained at an even distance.

Sometimes instead of employing cylinders I propose to employ bands of caoutchouc, leather, or analogous material, and the application of this arrangement is shown at Figures 20, 21, and 22; here let *a* represent an armature or wheel guard, which is fixed to the vehicle; to this armature strips *c* are applied, which can be held by bolts *b* or by any other good mode of securing the same; at the lower part these strips are held together by a bar *d*, which may be made of any elastic or other suitable material: it will be observed that the strips *c* and bar *d* extend a short distance beyond the armature, so that the object of the latter is only to maintain the strips in position.

In these Figures I have shown an ordinary wheel guard, but it will be better understood that a similar application can be made to a protecting apparatus, such as that shown at Figure 23, which I call a "Tronchon." In these different applications I have supposed the armature fixed either to the frame of the railway carriage or to the body of a road carriage or other vehicle, and the only objection that could be made would be that the vehicle being capable of being raised or lowered according to its load (the load is very variable) the shoe would vary in height from the ground or rail, but with an armature such as that shown at Figure 24 this observation would not be tenable; here I will suppose d^1 an axis on which I mount an armature *e* firmly maintained on the axis by bolts *f* or other good mode of attachment, this armature may be single or double, as shown in the Drawing; it will carry the guard.

I give here the application with a fixed guard, I can however obtain a similar result with a movable guard, as shown in the Fig. 25; in the latter case the armature *e* firmly secured on the axis d^1 is provided with at its lower part a joint e^1 which will support the parallelogram *f* and the brake shoe *g*. In this way however the vehicle may be loaded, the protecting shoe or brake will be always maintained at the same distance from the rail subordinate to that of the axle, and if I allow as an example five centimetres between the protection and the road or line this height will be always maintained however the vehicle may be loaded.

I wish it to be well understood that I intend the word vehicle to be very comprehensive, thus a skate is a vehicle, and I give on the accompanying Drawings several examples of my Invention as applied to this kind of vehicle, and people acquainted with these articles, and who are in the habit of using them will understand the necessity of having an automatic brake, so as to be able to stop oneself or to slacken speed when required.

At Figure 15 I have shown in full lines a skate provided with this arresting mechanism in its normal state, that is to say, when it is free to run, and in dotted lines the position of the skate and of the mechanism when the brake is applied; it will be seen that I have a double automatic brake depending at an inclination from the sole of the skate, viz., the roller *m* which acts at a given time to produce the brake action by its friction on the surface of the rink, and the shoe *n* which arrests the rotation of the skate roller, that is to say, there is a double action, one on the rink and the other on the roller.

At Figure 16 I give another illustration of this part of my Invention, the sole *o* carries a spring *p* to which is fixed a shoe *q*; *r* is a jointed lever united by a cross piece *s* to the shoe *q*, two soles *t*, t^1, made of leather, caoutchouc, or other suitable material, their object being to avoid injuring the rink are fixed to the cross piece *s*, so that when the skater inclines backwards it will not only bring the shoe *q* against the roller *n* of the skate, but moreover it will lower the soles *t*, t^1, on to the rink, whereby a double brake is obtained affording a perfect equilibrium, and thereby preventing accidents which so often occur with this kind of vehicle.

At Figure 17 another illustration is given of my Invention as applied to this kind of vehicle when in full lines; the skate is shown in its normal state and in dotted lines with the brake power applied.

I believe I have sufficiently described the different applications of my system of a brake protector which is intended to clear the line, and to protect any living object or not which may be placed there, the said operation being effected either

automatically by the obstacle itself which operates the brake, or by the conductor, driver, or other authorized person, according to the kind of vehicle, reserving to myself the right of varying the shapes and dimensions of the parts described without departing from the essential features of the Invention.

By my Invention any kind of vehicle can be stopped automatically and instantaneously, locomotives, railway, and other carriages by transforming rotary motion into a sliding motion, its articulation renders it self-acting and renders any injury to obstacle next to impossible, for supposing a person falls on the rails it produces by its own weight the obstacle, and puts the apparatus in action and removes it from the rail immediately; one or all of the wheels are under the control of the operator.

Having now described the nature of my said Invention and in what manner the same is to be performed, I declare that I claim,—

The construction and employment of a brake power consisting substantially of a parallelogram or mechanism capable of lowering horizontally a shoe platform or brake under the wheel or wheels which operates at the intersection of the rails and wheel transforming rotary motion of the latter into a sliding motion, and pushing or throwing away a human body or any other obstacle that may be encountered on the route, or the operation is produced by the conductor, guard, driver, or other authorized person, or by steam, air, or electricity in all cases, so that the shoe platform advances horizontally and at the intersection of the wheel and rail or the road, and not at an inclination.

Second. The several applicances and arrangement of apparatus for producing brake power, constructed and acting substantially as herein-before described and illustrated in the accompanying Drawings.

In witness whereof, I, the said Pierre Alfred Tronchon, have hereunto set my hand and seal, this Twenty-fourth day of February in the year of our Lord One thousand eight hundred and seventy-seven.

A. TRONCHON. (L.S.)

LONDON: Printed by George Edward Eyre and William Spottiswoode,
Printers to the Queen's most Excellent Majesty. 1877.